

REMARKS

I. Status of the Claims:

Claims 1-8 and 10- 28 remain in the case. None of the changes is believed to introduce new matter. Entry and consideration of this Amendment are respectfully requested.

II. Rejections

A. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, for reciting a plurality of receivers and at least one receiver in the claim.

B. Claims 1-15, 19-21, 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroaki Sudo US patent 6950474 in view of Sipola US Published Application 2002/0044612.

C. Claims 2-8, 10-14, 16, 25-26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroaki Sudo US patent 6950474 in view of Sipola US Published Application 2002/0044612 and further in view of Applicants' admitted prior art.

D. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroaki Sudo US patent 6950474 in view of Sipola US Published Application 2002/0044612 and further in view of ETSI EN 300 744 V1.4.1 (20001-01).

E. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroaki Sudo US patent 6950474 in view of Sipola US Published Application 2002/0044612 and further in view of Hosur US Published Application 2001/0033623.

III. Applicants' Response

A. Claim 24 -- 35 U.S.C. 112, second paragraph

Claim 24 is rejected under 35 U.S.C. 112, second paragraph, for reciting a plurality of receivers and at least one receiver in the claim. The above amendment is believed to cure this ground for rejection.

B. Claims 1-15, 19-21, 24 and 27 -- Hiroaki Sudo v/o Sipola

Claims 1-15, 19-21, 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroaki Sudo US patent 6,950,474 in view of Sipola US Published Application 2002/0044612.

The Applicant's claimed invention selects an appropriate symbol interleaver to obtain a desired depth of interleaving. The Applicant's claim 1 reads: "selecting the symbol interleaver is based on a desired depth of interleaving". The Applicant's claimed invention enables selecting the depth in symbol interleaving by selecting the symbol interleaver. This is discussed, for example, in the Applicant's specification paragraphs [0065] and [0066].

Hiroaki Sudo discloses an OFDM transmitter in Figure 4, which has two interleavers 102 and 103 that are connected in parallel, with both interleavers processing the same signal, so that the signal is concurrently interleaved in both interleavers, thereby producing two interleaved signals. The selector 104 then selects one of the two interleaved signals for transmission. By contrast, in the Applicants' claimed invention, a selection is made of which interleaver is to be used for interleaving. There is no need to interleave the same signal twice. Thus, in addition to the acknowledgement by the examiner that Hiroaki Sudo does not teach selecting based on interleaving depth, Hiroaki Sudo also does not teach selecting an interleaver, as claimed by the Applicants.

Hiroaki relates to retransmission control "where the first communication apparatus sends a signal to the second communication apparatus and when the signal received by the second communication apparatus contains an error, the first communication apparatus retransmits (resends) this erroneous signal to the second communication apparatus". Thus, the signal is interleaved two times. Hiroaki does not address how the second mode (retransmission) is

associated with the number of active carriers. The signal is sent to the first interleave processing section and to the second interleave processing section simultaneously. In Hiroaki, the selector 104 selects which of the two interleaved signals is sent to the transmission section 105 depending on whether the signal is transmitted for first time or is retransmitted. Thus, Hiroaki does not select an interleaver, but instead selects which of the two interleaved signals is sent.

In the second cited reference to Sipola, the number of symbol blocks to be interleaved determines the interleaving depth. Further according to Sipola, the interleaving depth is selected based on bit-error-rate measurements that are made at regular intervals. Sipola discloses that the interleaving depth and the type of interleaving method are selected for each symbol block, based on the number of symbol blocks to be interleaved. By contrast in the Applicants' claimed invention, the interleaver is selected and then applied to a number of blocks.

In the cited references, the size of the symbol interleaver and the size of the symbol to be interleaved are the same. This means that, for example, an 8K interleaver is used in an 8K operating mode, and a 2K interleaver is used in a 2K operating mode. However, when the system operates in 4K or 2K modes, the symbol interleaving depth is sometimes too small.

The solution presented in the Applicant's claimed invention enables selecting a symbol interleaver which was originally designed for a certain mode, to be used in another mode. In the Applicant's claimed invention, the 8K symbol interleaver can be used, for example, in 2K mode, wherein the interleaving depth becomes greater. This is due to the fact that the amount of data to be interleaved at a time (i.e., the block size) in 8K mode is greater than that in 2K mode. When 8K symbol interleaver is used in 2K mode, this means that interleaving is performed over four 2K symbols instead of one 2K symbol. This is in contrast to prior art solutions in which the 2K operating mode always used the 2K symbol interleaver. None of the cited references discloses or suggests selecting a symbol interleaver from a set of symbol interleavers, as claimed by the Applicant.

Moreover, none of the cited references discloses or suggests selecting an appropriate symbol interleaver to obtain desired depth of interleaving. The Applicant's claimed invention enables selecting the depth in symbol interleaving by selecting the symbol interleaver. This is in

contrast to the disclosures of all cited references. There is no capability in the cited references to select the interleaving depth by means of selecting the symbol interleaver.

The combination of Hiroaki Sudo and Sipola fails to disclose or suggest the Applicants' claimed invention.

C. Claims 2-8, 10-14, 16, 25-26, and 28 -- Sudo v/o Sipola and further in view of Applicants' admitted prior art.

The Examiner refers to "Applicant's Admitted Prior Art", which the Examiner explains on page 4 of the Office action as the Applicant's specification, paragraphs 2 and 6. Paragraph 2 merely discusses DVB-T broadcasting systems, which transmit broadband digital television signals from a DVB-T transmitter to a plurality of DVB-T receivers. Paragraph 6 merely discusses DVB-T broadcasting systems having a predetermined number of active carriers for transmission to a plurality of DVB-T receivers.

The DVB-T broadcasting systems do not disclose or suggest selecting an appropriate symbol interleaver to obtain desired depth of interleaving, as claimed by the Applicant. The Applicant's claimed invention selects the symbol interleaver based on a desired depth of interleaving, which is neither disclosed nor suggested by the cited references.

D. Claims 17-18 -- Sudo v/o Sipola and further in view of ETSI EN 300 744

The ETSI EN 300 744 V1.4.1 (2001-01) reference is the European Telecommunications Standardization Institute's standard for Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for digital terrestrial television. Pages 30-32, Table 9 and 15 referred to by the Examiner describe transmission parameter signaling.

The ETSI reference does not disclose or suggest selecting an appropriate symbol interleaver to obtain desired depth of interleaving, as claimed by the Applicant. The Applicant's

claimed invention selects the symbol interleaver based on a desired depth of interleaving, which is neither disclosed nor suggested by the cited references.

E. Claims 22-23 Sudo v/o Sipola and Hosur

Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroaki Sudo US patent 6950474 in view of Sipola US Published Application 2002/0044612 and further in view of Hosur US Published Application 2001/0033623.

Hosur discloses a frequency division multiplexing wireless transmission on two or more antennas with the set of symbols on subcarriers of a burst transmitted by one antenna transformed into another set of symbols on the subcarriers for the corresponding burst transmitted by another antenna.

The Hosur reference does not disclose or suggest selecting an appropriate symbol interleaver to obtain desired depth of interleaving, as claimed by the Applicant. The Applicant's claimed invention selects the symbol interleaver based on a desired depth of interleaving, which is neither disclosed nor suggested by the cited references.

None of the cited references discloses or suggests selecting a symbol interleaver from a set of symbol interleavers, as claimed by the Applicant.

Moreover, none of the cited references discloses or suggests selecting an appropriate symbol interleaver to obtain desired depth of interleaving. The Applicant's claimed invention enables selecting the depth in symbol interleaving by selecting the symbol interleaver. This is in contrast to the disclosures of all cited references. There is no capability in the cited references to select the interleaving depth by means of selecting the symbol interleaver.

The Applicant's claimed invention is patentable over the cited references taken singly or in combination.

CONCLUSION

Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application.

AUTHORIZATION

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. 13-4500, Order No. 4208-4234.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No 13-4500, Order No. 4208-4234.

Respectfully submitted,
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